

WHAT IS CLAIMED IS:

1. A method of manufacturing an electronic part from a wafer, comprising:
 - forming a mask on an active surface of the wafer on which electrode pads for the electronic part are formed, the mask being of a predetermined height and having openings provided above the electrode pads,
 - forming bumps inside of the openings of the mask provided above the electrode pads, the bumps having a height lower than that of the mask,
 - scattering conductive particles on the active surface of the wafer,
 - removing the conductive particles remaining on the surface of the mask,
 - fixing the conductive particles on the surfaces of the bumps,
 - removing the mask, and
 - separating the electronic part from the wafer.
2. The method according to Claim 1, further comprising:
 - forming a metal film on the surfaces of the bumps before the scattering of the conductive particles,
 - the fixing of the conductive particles on the surfaces of the bumps including fixing the conductive particles on the surfaces of the bumps by solidifying the metal after melting thereof.
3. The method according to Claim 1, further comprising:
 - coating a plastic resin on the surfaces of the bumps before the scattering of the conductive particles,
 - the fixing of the conductive particles on the surfaces of the bumps including fixing the conductive particles on the surfaces of the bumps by curing the plastic resin after plasticizing thereof.
4. The method according to Claim 1, further comprising:
 - coating a curable resin on the surfaces of the bumps before the scattering of the conductive particles,
 - the fixing of the conductive particles on the surfaces of the bumps including fixing the conductive particles on the surfaces of the bumps by curing the curable resin.
5. The method according to Claim 2,
 - the fixing of the conductive particles on the surfaces of the bumps performed while pressing the conductive particles against the surfaces of the bumps.
6. The method according to Claim 1, further comprising:

coating a liquid material containing a metal on the surfaces of the bumps after the scattering of the conductive particles,

the fixing of the conductive particles on the surfaces of the bumps including fixing the conductive particles on the surfaces of the bumps by solidifying the metal.

7. The method according to Claim 1, further comprising:

coating a plastic resin on the surfaces of the bumps after the scattering of the conductive particles,

the fixing of the conductive particles on the surfaces of the bumps including fixing the conductive particles on the surfaces of the bumps by curing the plastic resin.

8. The method according to Claim 1, further comprising:

coating a curable resin on the surfaces of the bumps after the scattering of the conductive particles,

the fixing of the conductive particles on the surfaces of the bumps including fixing the conductive particles on the surfaces of the bumps by curing the curable resin.

9. The method according to Claim 1, further comprising:

forming a metal film on the surfaces of the bumps before the scattering of the conductive particles, and

coating a liquid material containing the metal on the surfaces of the bumps after the scattering of the conductive particles,

the fixing of the conductive particles on the surfaces of the bumps including fixing the conductive particles on the surfaces of the bumps by solidifying the metal after melting thereof.

10. The method according to Claim 1, further comprising:

coating a plastic resin on the surfaces of the bumps before the scattering of the conductive particles, and

coating the plastic resin on the surfaces of the bumps after the scattering of the conductive particles,

the fixing of the conductive particles on the surfaces of the bumps including fixing the conductive particles on the surfaces of the bumps by curing the plastic resin after plasticizing thereof.

11. The method according to Claim 1, further comprising:

coating a curable resin on the surfaces of the bumps before the scattering of the conductive particles, and

coating the curable resin on the surfaces of the bumps after the scattering of the conductive particles,

the fixing of the conductive particles on the surfaces of the bumps including fixing the conductive particles on the surfaces of the bumps by curing the curable resin.

12. The method according to Claim 9,

the fixing of the conductive particles on the surfaces of the bumps performed while pressing the conductive particles against the surfaces of the bumps.

13. The method according to Claim 3,

the coating of the plastic resin or the curable resin including coating the liquid material which is prepared by dissolving the plastic resin or the curable resin in a solvent, and the solvent being evaporated after the coating of the plastic resin or the curable resin.

14. The method according to Claim 13,

the curable resin being a cured curable resin.

15. The method according to Claim 3, ,

the coating of the plastic resin or the curable resin including coating the liquid material containing the plastic resin or the curable resin on the bumps by a droplet ejection apparatus.

16. The method according to Claim 1,

the scattering the conductive particles including scattering the conductive particles coated with a metal, and

the fixing of the conductive particles on the surfaces of the bumps including fixing the conductive particles on the surfaces of the bumps by solidifying the metal after melting thereof.

17. The method according to Claim 1,

the scattering of the conductive particles including scattering the conductive particles coated with a plastic resin, and

the fixing of the conductive particles on the surfaces of the bumps including fixing the conductive particles on the surfaces of the bumps by curing the plastic resin after plasticizing thereof.

18. The method according to Claim 1,

the scattering of the conductive particles including scattering the conductive particles coated with an uncured curable resin, and

the fixing of the conductive particles on the surfaces of the bumps including fixing the conductive particles on the surfaces of the bumps by curing the curable resin.

19. The method according to Claim 1,
wherein the scattering of the conductive particles including scattering the conductive particles coated with a cured curable resin, and
the fixing of the conductive particles on the surfaces of the bumps including fixing the conductive particles on the surfaces of the bumps by coating a solvent capable of dissolving the curable resin.
20. The method according to Claim 3,
the plastic resin being a thermoplastic resin.
21. The method according to Claim 4,
the curable resin being a thermosetting resin.
22. The method according to Claim 4,
the curable resin being a photo-curable resin.
23. The method according to Claim 1, further comprising:
moving the conductive particles scattered on the surface of the mask to the surfaces of the bumps by vibrating the wafer after the scattering of the conductive particles.
24. The method according to Claim 23,
the vibrating of the wafer includes vibrating the wafer at a frequency of 50 Hz to 1000 Hz.
25. The method according to Claim 23,
the vibrating of the wafer including vibrating the wafer in parallel to the active surface of the wafer with an amplitude of not more than the width of the openings in the mask.
26. The method according to Claim 23,
the vibrating of the wafer including vibrating the wafer perpendicularly to the active surface of the wafer with an amplitude of not more than the difference between the height of the mask and that of the bump.
27. The method according to Claim 1,
the removing of the conductive particles remaining on the surface of the mask including removing the conductive particles remaining on the surface of the mask by blowing gas on the active surface of the wafer.
28. The method according to Claim 1,

the removing of the conductive particles remaining on the surface of the mask including removing the conductive particles remaining on the surface of the mask by vibrating the wafer.

29. The method according to Claim 1,

the removing of the conductive particles remaining on the surface of the mask including removing the conductive particles remaining on the surface of the mask by vibrating the wafer while it is sloped.

30. The method according to Claim 1,

the removing of the conductive particles remaining on the surface of the mask including removing the conductive particles as the conductive particles remaining on the surface of the mask are scraped off.

31. The method according to Claim 1,

the predetermined height of the mask being a height such that the difference between the height of the mask and that of the bumps is larger than the diameter of the conductive particles.

32. The method according to Claim 1, further comprising:

forming a curable resin layer on the active surface of the wafer before the separating of the electronic part from the wafer.

33. An electronic part manufactured by using the method of manufacturing the electronic part according to Claim 1.

34. A method of mounting the electronic part according to Claim 33 on a counterpart substrate, comprising:

curing a curable resin layer, together with pressing the electronic part, while positioning the electronic part on the counterpart substrate.

35. A method of mounting the electronic part according to Claim 33 on a counterpart substrate, comprising:

curing a curable resin layer, together with pressing the electronic part, while positioning the electronic part on the counterpart substrate in which the curable resin layer is formed.

36. A method of mounting the electronic part according to Claim 33 on a counterpart substrate, comprising:

curing a curable resin layer formed in a gap between the electronic part and the counterpart substrate, together with pressing the electronic part, while positioning the electronic part on the counterpart substrate.

37. The method according to Claim 34,
the curable resin layer being the thermosetting resin layer, and
the curable resin layer being heated at a temperature capable of melting the
metal fixing the conductive particles on the surfaces of the bumps when the curable resin
layer is cured.
38. The method according to Claim 34,
the curable resin layer being the thermosetting resin layer, and
the curable resin layer being heated at a temperature capable of plasticizing the
thermoplastic resin fixing the conductive particles on the surfaces of the bumps when the
curable resin layer is cured.
39. An electronic apparatus manufactured by using the method of mounting the
electronic part according to Claim 34.